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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,103	06/25/2001	Takahiro Ishizuka	003510-099	7294

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EXAMINER	
SHOSHO, CALLIE E	
ART UNIT	PAPER NUMBER
1714	3

DATE MAILED: 02/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/887,103	ISHIZUKA, TAKAHIRO	
	Examiner	Art Unit	
	Callie E. Shosho	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claim 3 is objected to because of the following informalities:

Due to poor copy quality, the subscripts of various substituents in the formulas set forth in claim 3 cannot be determined. In formula Cp-2, Cp-3, Cp-8, Cp-14 through Cp-16 and Cp-18 through Cp-20, it is not clear what subscripts are associated with the "R" substituents.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4, 5, 12, and 14-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claim 4 recites an improper Markush group. It is suggested that either (i) after "any" and before "of" in line 2, the phrase "selected from the group consisting" is inserted or (ii) "and" is changed to "or" in line 3.

Similar suggestions are made in claim 5, line 3, where it is suggested that before "a", "and" is changed to "or" and in claim 14, line 4, where it is suggested that before "pouring", "and" is changed to "or".

(b) Claim 12 recites that the block copolymer has an ionic group and "a contained amount of ionic group is from 0.2 mmol/g or more to 5.0 mmol/g or less". The scope of the claim is confusing because it is not clear what is meant by "contained amount". Clarification is requested.

(c) Claim 15 recites "high boiling point organic solvent". The scope of the claim is confusing because it is not clear what is meant by "high". What temperatures does this encompass? What boiling point must the solvent possess to be considered a "high" boiling point?

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 5-7, 9-11, 13, 15-16, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Yanagi et al. (U.S. 5,631,309) taken in view of the evidence in Miyabayashi et al. (U.S. 6,204,307).

Yanagi et al. disclose ink jet ink wherein the ink comprises colored particulates containing oil-soluble dye and block copolymer which has molecular weight of 1,000-10,000 and

is formed from hydrophobic segment which is obtained from only hydrophobic monomers such as styrene and from hydrophilic segment which is obtained from hydrophilic monomers such as (meth)acrylic acid. The ink comprises 0.7-7% dye and 0.5-10% polymer so that the ratio of polymer to dye ranges from approximately 0.07:1 to 14:1. The ink contains solvent such as ethylene glycol, glycerin, and N-methyl-2-pyrrolidone which are well known, as evidenced by Miyabayashi et al. (col.10, lines 34-47), as high boiling point solvents (col.2, lines 57-60, col.3, lines 2-5, 8-10, and 21, col.4, lines 27-29, col.5, lines 10-13, 21-22, and 38, and col.6, lines 9-10 and 36-40).

In light of the above, it is clear that Yanagi et al. anticipate the present claims.

6. Claims 1, 5-11, 13-15, and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishii et al. (U.S. 5,302,654) taken in view of the evidence in Miyabayashi et al. (U.S. 6,204,307).

Ishii et al. disclose water-based ink jet ink used in ink jet printer to form images wherein the ink comprises colored particulates containing oil-soluble dye and block copolymer which has number average molecular weight of 1,000-10,000 and is formed from hydrophobic segment which is obtained from only hydrophobic monomers such as (meth)acrylates and from hydrophilic segment which is obtained from only hydrophilic monomers such as (meth)acrylic acid. The colored particulates are made by emulsification wherein water is added to organic solvent phase containing block copolymer and dye. The colored particulates have particle size of 0.01-1 μm or preferably 164-290 μm. The ink contains solvent such as ethylene glycol monoalkyl ether which is well known, as evidenced by Miyabayashi et al. (col.10, lines 34-47),

as a high boiling point solvent (col.1, lines 10-11, 16-17, and 50-57, col.2, lines 6-30, col.3, lines 14-16, 43-46, and 49-56, col.4, lines 11-13, col.5, lines 5-10, and col.8, lines 23-25).

In light of the above, it is clear that Ishii et al. anticipate the present claims.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

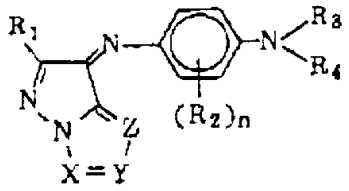
8. Claims 2-4 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi et al. (U.S. 5,631,309) or Ishii et al. (U.S. 5,302,654) either of which in view of either JP 03231975 or Suzuki et al. (U.S. 5,508,421).

The disclosures with respect to Yanagi et al. and Ishii et al. in paragraphs 5 and 6, respectively, are incorporated here by reference.

The difference between Yanagi et al. or Ishii et al. and the present claimed invention is the requirement in the claims of specific type of oil-soluble dye.

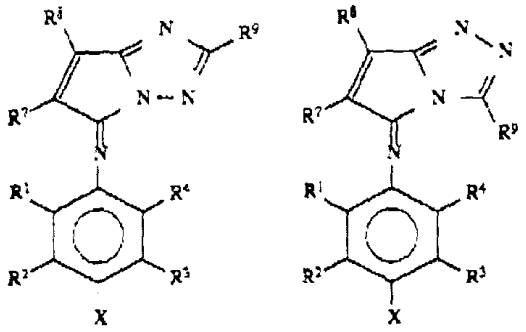
Both Yanagi et al. and Ishii et al. disclose colored particulates comprising oil-soluble dye, but there is no disclosure in either reference of specific oil-soluble dye as presently claimed.

JP 03231975, an English translation of which is included in this office action, is drawn to ink jet inks and discloses oil-soluble dye of the formula:



wherein R_3 and R_4, which correspond to presently claimed R^4 and R^5, are each hydrogen, alkyl, cycloalkyl, aralkyl, or aryl group, R_2, which corresponds to presently claimed R^2 or R^3, is hydrogen, cyano, alkyl, alkoxy, aryl, amino, or halogen, R_1, which corresponds to presently claimed R^{63} (see formula Cp-4, Cp-5, and Cp-6 in present claim 3), is hydrogen, alkyl, aryl, or amino, X and Y are independently either $-CR_5=$ or $-N=$, where R_5, which corresponds to presently claimed R^{64}, R^{65}, or R^{66} (see formula Cp-4, Cp-5, and Cp-6 in present claim 3), is hydrogen, alkyl, aryl, or heterocyclic, group, and presently claimed B^1 is $=C(R^6)-$ and B^2 is $-C(R^7)=$ wherein R^6 and R^7 are each hydrogen (abstract and claim 1). The motivation for using such dye is to produce a printed image with good hue (page 6, first full paragraph).

Alternatively, Suzuki et al. disclose the use of oil-soluble dyes of the formula:



wherein X is -OH or -NR^5R^6 where R^5 and R^6, which correspond to presently claimed R^4 and R^5, are each hydrogen, alkyl group, aryl group, or heterocyclic group, R^4 and R^3 which correspond to presently claimed R^2 and R^3, are each hydrogen , aryl, alkyl, cyano, carbamoyl, cyano, sulfamoyl, or nitro group, R^7 which corresponds to presently claimed R_{87}, is carbamoyl, alkoxycarbamoyl, or cyano, and R^8 and R^9 which correspond to presently claimed R_{88} and R_{89}, respectively, are each hydrogen, aryl, alkyl, cyano, carbamoyl, cyano, sulfamoyl, or nitro group(see formula Cp-18 and Cp-19 in present claim 3), and presently claimed B^1 is =$C(R^6)$- and B^2 is –$C(R^7)$= wherein R^6 and R^7 are each hydrogen (col.3, lines 38-67, col.4, lines 12-29, col.6, line 42-col.7, line 57, col.9, lines 12-52, col.10, lines 14-30, and col.13, lines 3-5 and 21-23). The motivation for using such dyes is that they possess high absorption and high fastness to light and heat (col.2, lines 7-10 and col.3, lines 14-21).

In light of the motivation for using specific dye disclosed by JP03231975 or Suzuki et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such dye in the ink of either Yanagi et al. or Ishii et al. in order to produce ink which produces printed image with good hue, or alternatively, to produce ink with high fastness to light and heat, and thereby arrive at the claimed invention.

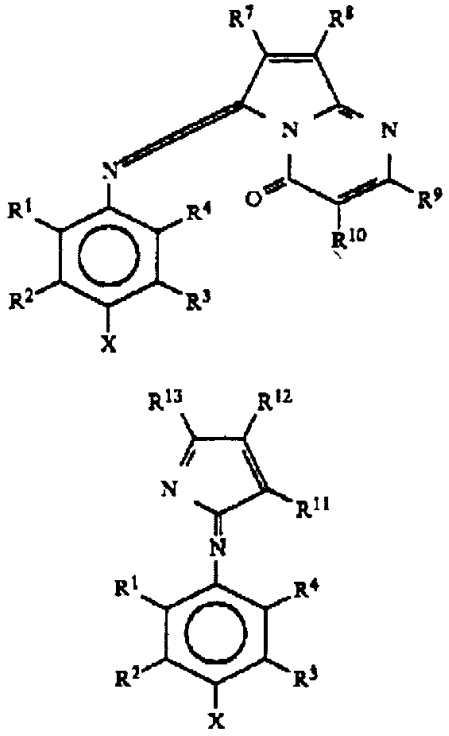
9. Claims 2-4 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi et al. (U.S. 5,631,309) or Ishii et al. (U.S. 5,302,654) either of which in view of Mikoshiba et al. (U.S. 5,344,933).

The disclosures with respect to Yanagi et al. and Ishii et al. in paragraphs 5 and 6, respectively, are incorporated here by reference.

The difference between Yanagi et al. or Ishii et al. and the present claimed invention is the requirement in the claims of specific type of oil-soluble dye.

Both Yanagi et al. and Ishii et al. disclose colored particulates comprising oil-soluble dye, but there is no disclosure in either reference of specific oil-soluble dye as presently claimed.

Mikoshiba et al. disclose ink suitable for use in ink jet printing wherein the ink comprises oil-soluble dye identical to that presently claimed wherein the dye is one of the following:



where X, which corresponds to presently claimed A is –OH or $-NR^5R^6$ where R^5 and R^6, which correspond to presently claimed R^4 and R^5, are each hydrogen, alkyl, aryl, or heterocyclic group, R^3 and R^4, which correspond to presently claimed R^2 and R^3, are each hydrogen, halogen, alkyl, aryl, cyano, etc., presently claimed B^1 is $=C(R^6)-$ and B^2 is $-C(R^7)=$ wherein R^6 and R^7 are each hydrogen, R^7, R^8, R^9, R^{10}, which correspond to presently claimed R_{91}, R_{92}, R_{93}, and R_{94}, respectively, are each hydrogen, alkyl, aryl, cyano, etc. (see formula Cp-21 in present claim 3), and R^{11}, R^{12}, and R^{13}, which correspond to presently claimed R_{84}, R_{83}, and R_{82}, respectively, are each hydrogen, aryl, alkyl, aryl, alkoxy, etc., (see formula Cp-16 in present claim 3) (col.2, lines 55-68, col.3, lines 1-25, col.3, line 65-col.4, line 13, and col.40, line 59).

The motivation for using such dye is that the dye has high fastness in heat, light, moisture, air, and chemicals and is inexpensive and easy to synthesize (col.2, lines 10-15).

In light of the motivation for using specific dye disclosed by Mikoshiba et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such dye in the ink of either Yanagi et al. or Ishii et al. in order to produce ink which produces printed image with good hue, or alternatively, to produce ink with high fastness to heat, light, moisture, air, and chemicals and thereby arrive at the claimed invention.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi et al. (U.S. 5,631,309) or Ishii et al. (U.S. 5,302,654) either of which in view of Breton et al. (U.S. 6,384,108).

The disclosures with respect to Yanagi et al. and Ishii et al. in paragraphs 5 and 6, respectively, are incorporated here by reference.

The difference between Yanagi et al. or Ishii et al. and the present claimed invention is the requirement in the claims of amount of ionic group in the block copolymer.

Both Yanagi et al. and Ishii et al. disclose that the block copolymer is obtained from hydrophilic monomer including those containing ionic group such as acrylic acid, however, there is no disclosure regarding the amount of ionic group present.

Breton et al., which is drawn to ink jet ink comprising colored particles of an emulsifiable ionic polymer containing dye, disclose using 2.5-15 mol% hydrophilic monomer in the polymer in order to control the particle size of the polymer (col.4, lines 21-27).

In light of the motivation for using specific amount of hydrophilic monomer disclosed by Breton et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to control the amount of hydrophilic monomer and thus, ionic group, in the block copolymer of either Yanagi et al. or Ishii et al. to amounts including that presently claimed in order to produce block polymer with suitable particle size, and thereby arrive at the claimed invention.

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (U.S. 5,302,654) in view of Meyrick et al. (U.S. 6,406,526).

The disclosure with respect to Ishii et al. in paragraph 6 above is incorporated here by reference.

The difference between Ishii et al. and the present claimed invention is the requirement in the claims of the amount of block polymer which is used with respect to the amount of oil-soluble dye.

Meyrick et al., which is drawn to ink jet ink comprising colored polymer, disclose that the amount of dye and polymer present in the ink will vary according to the depth of shade required, typically in ratio of 1:1 to 15:1 (col.9, lines 34-38 and 60-67).

In light of the motivation for using specific ratio of polymer and dye disclosed by Meyrick et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such amounts of polymer and dye in the colored particulates in the ink of Ishii et al. in order to produce ink with desired color, and thereby arrive at the claimed invention.

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi et al. (U.S. 5,631,309) or Ishii et al. (U.S. 5,302,654).

The disclosures with respect to Yanagi et al. and Ishii et al. in paragraphs 5 and 6, respectively, are incorporated here by reference.

The difference between Yanagi et al. or Ishii et al. and the present claimed invention is the requirement in the claims of amount of amount of colored particulates present in the ink.

Both Yanagi et al. and Ishii et al. are silent with respect to the amount of colored particulates present in the ink.

However, given that the colored particulates are used to color the ink and given that the color strength, shade, density, etc. are all important ink properties, it would have been within the skill level of, as well as obvious to, one of ordinary skill in the art to choose amounts of colored particulates, including that presently claimed, in order to produce an ink with the desired color strength, shade, density, etc., and thereby arrive at the claimed invention.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Onodera et al. (U.S. 5,753,017) disclose ink jet ink comprising oil-soluble dye identical to that presently claimed, however, there is no disclosure of coloring particulates as presently claimed.

Yui et al. (U.S. 5,948,155) disclose ink jet ink comprising oil-soluble dye and block copolymer, however, there is no disclosure of coloring particulates as presently claimed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Callie E. Shosho
Examiner
Art Unit 1714

CS
February 10, 2003